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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/600,787	11/24/2000	Carl Dudley Jarman	F7417(C)	1443

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PATENT DEPARTMENT  
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EXAMINER

LIU, SAMUEL W

ART UNIT

PAPER NUMBER

1653

DATE MAILED: 08/16/2002

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Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/600,787

Applicant(s)

JARMAN ET AL.

Examiner

Samuel W Liu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 July 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) 7-13 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 8.
- ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_.

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### **DETAILED ACTION**

The current response to restriction requirement filed on 12 July 2002 (Paper NO:16) has been received and entered. Preliminary amendment filed 21 July 2000 (Paper NO:7), amendment filed 17 January (Paper NO:12), Abstract filed 17 January 2002, and Applicants' request for extension for four months has been entered.

#### ***Foreign Priority***

Applicants' claim for foreign priority under 35 U.S.C. 119 is acknowledged.

#### ***Election/Restrictions***

Applicant's election with traverse of Group I, Claims 1-6 is acknowledged. Claims 7-13 are withdrawn from consideration by the examiner, as being drawn to a non-elected invention. Thus, Claims 1-6 are pending and examined in this Office action.

Applicant's election with traverse of Group I Claims 1-6 in Paper NO: 16 with traversal. The traversal is on the ground(s) that the special technical feature is not simply an antifreeze protein per se, and is the protein that has the stated amino acid composition. This is not found persuasive. To the contrary to applicants' argument, US patent NO:6348569 (19 February 2002) teaches an antifreeze protein that is Ser-, Thr- and Asn- rich (counted for 40% total amino acid residues of the AFP) from spruce budworm, which anticipates Claim 1 of the instant application (note that Claim 1 recites "anti-freeze protein which can be derived from plants.."; this conditional language allows to extend obtaining the AFP from living organisms rather than plants). In addition, an AFP which can be obtained from plants or other organism does not constitute a special technical feature as defined by PTC Rule 13.2 since it does not define a contribution over the prior art. Thus, the inventions listed as Groups I-V lack the same or

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corresponding special technical features. The invention groups as stated in the previous office action filed 27 February 2002 is proper in accordance with 37 CFR 1.499 and made final.

***Objection to Specification***

The disclosure is objected to because of the following informalities:

- (1) In page 4, line 8, "w.r.t" should be spelled out in full for the first instance for use .
- (2) In page 9, line 15, the term "µm" should be changed to "µM
- (3) In abstract, "S, T or N" (in the first line) should be spelled out in their corresponding meanings (serine, threonine or asparagine) for clarity; and "overlap with " (in the second line) should be changed to "sequence identity to" for clarity as well. Please note that the directions for entry of the abstract are inappropriate. Entry should be on a separate new page with, e.g., a page number.

Corresponding correction is required.

***Claim Rejection -35 U.S.C. § 101***

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefore, subject to the conditions and requirements of this title.

Claim 1 is rejected under 35 U.S.C. 101 because the claimed recitation is directed to non-statutory subject matter. The claim is drawn to a protein which reads on a product of nature. In the specification, applicants set forth that antifreeze protein (AFP) is derived (obtained) from grass e.g. *Lolium perenne* etc. (see page 5, the second paragraph), indicating that the claimed AFP is obtained from nature. Yet, the claim *per se* does not explicitly set forth the status of AFP as to being isolated or separated. Claim 1 recites a conditional language "can be derived from".

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Given the AFP is derived from plant, the claimed protein AFP would be a natural product without being processed by human.

The claim should be amended to indicated the hand of the inventor, for example, by insertion of "isolated or purified" See MPEP 2105. The dependent claimed are also rejected.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 is indefinite in recitation "... which can be derived from...", since the "can be" is a conditional language allowing the said antifreeze protein to be obtained from or not from plants; thus, leading to an ambiguity of interpreting the claim. Claim 1, in the alternative, absent language such as "isolated" and/or "purified" can be interpreted as being a naturally occurring product in its natural environment and is thus, a product as it exists in nature.

Claim 3 is unclear as to "at least 80% overlap with the following amino acid sequence"; does "overlap with" mean structural overlap or functional overlap? Given the overlap with the said amino acid sequence, the claim is also unclear with respect to how overlapping can be performed as to overlapping the inspected fragments from N-terminus to C-terminus or the reverse direction. See also Claims 4 and 5. In addition, Claim 3 is indefinite as to "as modified version" thereof; what does "the version" refer to? Does it refer to the sequence (primary

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structure) disclosed *per se*, or refer to secondary structure or ternary structure of protein, or refer to a mutation introduced by protein engineering, or refer to a mutagenesis-generated polypeptide, or refer to a polypeptide resulted from post-translational modification, e.g. phosphorylation, acetylation, N-myristoylation, glycosylation and ubiquitination?

***Claim Rejections - 35 USC §102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office Action:

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

The claims 1 and 2 are rejected under 35 U.S.C. 102(e) as being anticipated by Walker, V. K. et al. (US Patent NO:6348569).

Walker et al disclose an antifreeze protein (SEQ ID NO:3) that is constituted by 40% of serine, threonine and asparagine residues (see column 7 and 8, and Claims 1, 5 and 11). Also, Walker et al teach that the antifreeze protein can be obtained from a plant (see Claim 1 and Column 3, lines 27- 39). Thus, Walker et al anticipate Claims 1 and 2 of the instant application.

***Claim Rejections - 35 USC § 103***

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The Claims 1-2 and 6 are rejected under 35 U.S.C. 103 (a) as being obvious over Walker, V. K. et al. (US pat. NO: 6348569) taken with Warren, G. J. et al (US Pat. NO: 5118792).

Walker et al. disclose an antifreeze protein (SEQ ID NO :3) that is constituted by 40% of serine, threonine and asparagine residues (see column 7 and 8, and Claims 1, 5 and 11). Also, Walker et al teach that the antifreeze protein can be obtained from a plant (see Column 3, lines 27- 39). Thus, Walker et al anticipate Claims 1 and 2 of the instant application.

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Although Walker et al do not disclose the protein modification via glycosylation, Warrant et al teach that the antifreeze protein is modified by glycosylation (see column 6, lines 52-64), as applied to Claim 6 of the instant application.

One of ordinary skill in the art would have combined the teachings of Walker et al. and Warrant et al. for the advantage that is the isolated or recombinant antifreeze protein (AFP) can be synthesized by an plant cell, an insect cell, a mammalian cell, a yeast cell or a bacterial cell (se claim 1) in light of posttranslational modification, yield and purity when obtained as a large scale. When combined the teachings of Walker et al. and Warrant et al., one of ordinary skill in the art would have produced AFP and/or glycosylated AFP to apply the produced AFP(s) in food industry.

### ***Conclusion***

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Samuel Wei Liu whose telephone number is (703) 306-3483.

The examiner can normally be reached from 9:00 a.m. to 5:00 p.m. on weekdays. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Christopher Low, can be reached on 703 308-2923. The fax phone number for the organization where this application or proceeding is assigned is 703 308-4242 or 703 872-9306 (official) or 703 872-9307 (after final). Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 305-4700.



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August August 11, 2002

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